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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,528	03/31/2004	Shan C. Clark	42P18249	1572

8791 7590 09/27/2005

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EXAMINER

CHU, JOHN S Y

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/815,528

Applicant(s)

CLARK ET AL.

Examiner

John S. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 26-30 is/are rejected.
- 7) ☒ Claim(s) 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This Office action is in response to the application filed March 31, 2004.

#### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 7, 9-24, 26-28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by ZAMPINI et al 6,503,689.

The claimed invention is drawn to the following:

1. A process, comprising:

providing a substrate;

applying an anti-reflective coating comprising a radiation path altering additive

above the substrate;

applying a photoresist above the anti-reflective coating; and

patterning the photoresist with radiation.

ZAMPINI et al anticipates the claimed invention at Example 3 in column 18, line 65 – column 19, line 15. Here the example discloses the claimed process wherein an anti-reflective layer is coated on a substrate, the photoresist composition is applied onto said anti-reflective layer which is then exposed and developed to form a pattern.

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Applicants are further directed to 13, lines 50-67 wherein ZAMPINI et al disclose the presence of crosslinked polymer particles in the anti-reflective layer. This disclosure anticipates the recited claim 9 and 18 and the dependent claims which depend on those claims.

3. Claims 1-5, 7, 16-24, 26-28 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by ENOMOTO et al 2004/0072420 A1.

The claimed invention has been recited above and is included by reference.

ENOMOTO et al anticipates the claimed invention at column page 9, subparagraph [0085] – page 10, subparagraph [0091] and in claim 13 seen here:

13. A method for manufacturing a semiconductor device, comprising applying an anti-reflective coating composition according to any one of claims 1 to 11 onto a substrate and baking it to form an anti-reflective coating, covering said coating with a photoresist, exposing the substrate covered with said anti-reflective coating and said photoresist, developing and transferring an image onto the substrate by etching to form integrated circuit elements.

The method anticipates the recited process of claims 1 and 18 as well as the dependent claims

The anti-reflective composition of ENOMOTO et al comprises light absorbing compounds as recited in subparagraphs [0039] – [0043] and meet the claimed additive as recited.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-1-24, 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over GUTSCHE et al 6,033,977 in view of ZAMPINI et al.

The claimed invention has been recited above and is included by reference.

GUTSCHE et al discloses a dual damascene method wherein the dual damascene structure is formed wherein the anti-reflective layer is used in the process of forming conductive lines, see Fig. 4 and column 4, lines 52 – 68. Here the suggestion to use an ARC in the method is taught and the use of any of the known anti-reflective layer composition can be used.

GUTSCHE et al lacks the claimed ARC as recited.

ZAMPINI et al discloses an antireflective layer composition which can be seen to be suitable in the method of GUTSCHE et al. The ARC includes polymer particles in the ARC composition which meets the claimed ARC of claim 1.

It would have been *prima facie* obvious to one of ordinary skill in the art of dual damascene processes to substitute the ARC composition of ZAMPINI et al in the process of GUTSCHE et al with the reasonable expectation of success and give a method of manufacturing a dual damascene structure.

6. Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior art references of record disclose the claimed multi-layer mirror as an additive in the ARC.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JAIN et al 5,741,626, TAKEI et al 6,444,320 and 2003/0146416 are cited of interest for anti-reflective composition used in dual damascene methods.

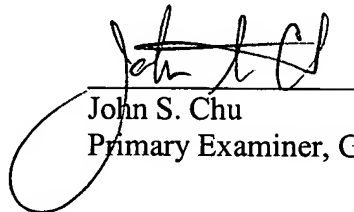
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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

The fax phone number for the USPTO is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John S. Chu  
Primary Examiner, Group 1700

J.Chu  
September 19, 2005